

Appl. No. 10/070,342
Amdt. dated 3 July 2003
Reply to Office action of 7-Apr-03

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GROUP 3700Remarks/Arguments*Reconsideration Requested*

The applicant has given careful consideration to the examiners detailed action including grounds of the examiner in objecting to the drawings and the claims due to informalities and under Rule 83(a); and in rejecting various claims under consideration by applying Yamanashi, *et al.* (US Pat. No. 6,059,781) in view of Esty, *et al.* (US Pat. No. 4,032,738) and in further view of Eggers (US Pat. No. 5,911,719) and Anderson, *et al.* (US Pat. No. 4,607,161) under 35 USC §103. Amendments to the claims have been made. The amendments made enjoy full support by applicant's specification, claims, and drawings as filed; no new matter has been included. For the following reasons, applicant respectfully solicits reconsideration of each of the examiner's rejections by fully responding below.

Objection to the Drawings under 37 CFR 1.83(a)

Applicant's drawings stand objected, per examiners comments: "Therefore the capacitor connected to the center-tap of the transformer must be shown or the feature(s) canceled from the claim(s)." It is respectfully submitted that no correction is necessary. Please see applicant's specification page 9, line 19 – page 10, line 2, as well as page 11, lines 28 – 34, where applicant provides technical discussion of this feature shown in the FIGs., reproduced for handy reference:

... A variable capacitor such as that represented at 130 can be employed to tune the probe circuitry. Tuning element 130 is center tapped via electrical pathway 148 to secondary winding 147 of inductive element 144 and shown grounded at 137, are both primary winding 145 as well as conductive capture mechanism 133 of cable-release assembly 134 (which may be an off-the-shelf BNC type connector). Furthermore, as designed here, a magnetic core having the capability to be positioned along windings 145, 147 allows for an additional degree of freedom to aid in tuning the circuit as a 'variable inductor'.

By way of example only, one may design the probe circuit to operate with an RF signal resonating at 13.56 MHz for cutting and cauterizing mammalian tissue utilizing a single-layer autotransformer (such as that illustrated at 144 in FIG. 4) having a primary winding (N1) equal to 20 turns and a secondary winding (N2) equal to 40, therefore having a winding ratio of 2:1. Wiring within the probe 140 may, by way of example, comprise 16 gauge wire (AWG)- chosen for its high fusing current rating (approximately 117 amperes). Electrical connection between components can be by way of soldering or other means for causing a solid electrical connection. A silver-

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mica capacitor may be used for tuning element 130 - these devices are known to be generally stable over a wide operating range of frequencies. Parameters of interest in calculating capacitance of a tuning element (such as that labeled 130 in FIG. 4) for the RF circuitry of the invention to support a signal that resonates at 13.56MHz, include: ω_0 = frequency of signal in radians/sec; L = inductance (H); C = capacitance (farads); which one can readily calculate at: $C = \sim 7 \text{ pf}$.

...

The probe unit 40 of FIG. 5 illustrates an alternative means by which one can attach a conductive tip (here, labeled 52): an engagement mechanism known as a 'banana jack' having an end 53 with a catch that, upon inserting along directional arrow 58, mates with capture mechanism 55. The capture mechanism 55 is shown interconnected to a switch at 50, which is in turn interconnected to inductive element 44, shown here as a transformer with a core 46 to which a tuning element 62 has been center-tapped 48. First winding 49 of the primary coil and a conductive capture mechanism of cable-release assembly 66, are grounded [as amended hereby].

Specification and Claim Objections

Applicant has amended his specification and claims to reflect the minor editorial comments suggested by the examiner.

Claim Rejections under 35 USC § 103

I. Yamanashi, *et al.* in view of Esty, *et al.*

Applicant's claims 1-4, 7, 12-17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanashi, *et al.* (US Pat. No. 6,059,781) in view of Esty, *et al.* (US Pat. No. 4,032,738) and further by applying "well known in the art", "inherency", and "matter of design choice" arguments. On page 4 of the office action, the examiner correctly points out that the reference, Yamanashi, *et al.*, does not show certain of applicant's claimed features: "Yamanashi *et al.* fail to I) explicitly disclose a tuning element, II) disclose a switch electrically connected between the inductive element and the conductive cutting tip and III) disclose encasing the impedance matching circuit in a hand-held probe housing." The very focus of Yamanashi, *et al.* is to a surgical probe with a forceps configuration with two blades, with one serving as an active blade and the other passive. Yamanashi, *et al.* makes an offhanded comment that the endoscopic probe may be provided generally similar to the surgical probe 18 of FIG. 5. Regardless, the *only* supporting instrumentation to the surgical probe designs in Yamanashi, *et al.* can be found at col. 4, lines 42 - 52 where they reference a patent cited originally by the applicant, namely, Yamanashi US Pat. No. 5,019,076 (Yamanashi '076). FIG. 9 of Yamanashi '076 discloses the instrumentation detailed and distinguished by the applicant in his specification beginning on page 1, line 33 through page 2, line 23. Here, as *prima facie* confirmation of the differences,

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applicant distinguishes his unique claimed structure, from a reference, Patil, A.A., Yamanashi, W.S. entitled *Electroconvergent Cautery*, which, in fact, discloses the design in Yamanashi '076:

Known early-generation surgical tools include the electromagnetic field focusing (EFF) probe and the later-developed electroconvergent cautery (ECC) system, both of which include a system of large, complex external subassemblies; for reference, see FIG. 1 which is a block diagram illustrating the current EFF system setup; and for the ECC system setup, see Patil, A.A., Yamanashi, W.S. "Electroconvergent Cautery" *Neurosurgery*, Vol. 35, No. 4 (October 1994): 785-788. In either case, the handheld probes associated with the EFF or ECC systems (in FIG. 1, EFF probe is labeled P) merely include a hot tip for cutting, wiring that extends the length of the probe handle, a vacuum tube attached to an external vacuum source to aid in the removal of vaporized tissue and fluids generated at the hot tip of the probe during operation, and an electrical connector at the other end of the probe handle for connecting to the external, complex impedance matching assembly (such as that represented in FIG. 1 and labeled IMN). A separate probe ON/OFF foot pedal, labeled FP in FIG. 1, is electrically hardwired to the probe system for use by a surgeon. Unfortunately, the foot pedal switch and the separate probe tuner of the known system are awkward—taking up much-coveted space in an operating room. Furthermore, not only is it difficult for a surgeon to locate, without the benefit of direct visual aids, the foot pedal of these prior devices while concentrating on handling and focusing the probe to cut the necessary area of tissue, but once the foot pedal is located, a surgeon's foot can ~~accidentally~~ accidentally fall-off of the pedal— which of course can create very dangerous situations during surgery causing inadvertent injury [as corrected by amendment, hereby].

Unlike these known proposed cutting systems, one can readily appreciate the efficient, streamlined design of the handy novel tool and method for cutting of the invention. It is important to note that the new tool preferably has a switch incorporated with a handheld-sized probe housing, as well as impedance matching circuitry encased within the probe housing to help transform load impedance into the characteristic impedance of the input RF power to obtain maximum power transfer (impedance matching) and improve coupling efficiency of the tool network, all of which make the new tool more convenient to a user. Additionally, the tool of the invention operates ...

There is no need or reason identified or suggested by Yamanashi, *et al.* or Yamanashi '076 to build applicant's probe structure(s) as claimed to combine any reference or, as a matter of design, to arrive at applicant's claimed combination(s) "said impedance matching circuit is encased by a handheld-sized probe housing, and said switch-contact area is encased by said

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housing [claim 1]" and "providing RF power from the source to an impedance matching circuit electrically connected to a conductive cutting tip through a switch-contact area, said circuit and said switch-contact area being encased by a handheld-sized housing for the probe [claim 14]." Rather, an artisan would be led away from making applicant's claimed combination—concluding, instead, that by continuing to focus on the large instrumentation styling of its earlier patent '076, Yamanashi had no appreciation for the handy nature of applicant's design.

On page 5 of the office action, the examiner correctly points out that the reference, Esty, *et al.*, does not show certain of applicant's claimed features: "Esty *et al.* do not disclose the switch connected between the inductive element and the conductive cutting tip, . . ." A closer look at Esty, *et al.* (see, especially col. 3, lines 48 – 56) reveals that the Esty, *et al.* pencil-shaped housing 10 is merely a conduit for current to flow from chuck 15 to an electrical generator—which is, in fact, not shown. Esty *et al.* design needs no such localized switch assembly. Thus, as is the case for Yamanashi, *et al.*, there is nothing in Esty *et al.* to suggest or lead or motivate an artisan to create applicant's design, as claimed. Teachings of various references simply cannot be found, and references combined to reject a claimed combination, where those references contain no suggestion or motivation to so combine them. Nowhere in the Yamanashi, *et al.*, Yamanashi '076, or Esty, *et al.* discussions of respective contemplated structures do these references teach applicant's claimed structure(s); as confirmed by the examiner, features claimed by applicant are missing from each. Applicant's combination of features provides for greater control and flexibility to users. It is difficult to imagine how one could be led by cited references to combine them as has been done here to reject applicant's apparatus and method claims.

II. Yamanashi, *et al.* in view of Esty, *et al.* and Eggers

Applicant's claims 6 and 18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanashi, *et al.* (6,059,781) in view of Esty, *et al.* (4,032,738) and further view of Eggers (5,911,719). In connection with use of Eggers (US Pat. No. 5,911,719) as a reference, attached is applicant's DECLARATION (37 CFR § 1.68) pursuant to 37 C.F.R. § 1.131, evidencing earlier invention by the applicant. One interesting point should be noted, here: while Eggers '719 portrays a resistively heated thermally cutting and coagulating surgical instrument that has a handheld unit, consistent with the Yamanashi and Esty, *et al.* designs where certain components of the instrument are built as *separated* features from the handheld unit portion, the Eggers '719 unit (40) is missing any suggestion of a local switch mechanism.

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III. Yamanashi, et al. in view of Esty, et al. and Anderson, et al.

Applicant's claims 5, 19, 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanashi, et al. (6,059,781) in view of Esty, et al. (4,032,738) and of Anderson, et al. (4,607,161). Anderson, et al.'s technical discussion has a narrow focus and is directed to a limit switch that "requires no outside electrical power source in the vicinity of the switch itself ... [and] replaces the presently used limit switches electrically connected to an external power source, with a device which utilized fiberoptic transmission of light as the signal medium [col. 2, lines 26 - 32]." At the top of col. 4 of Anderson, et al. they explain that the only contemplated application of their disclosure is to a 'limit switch' which is defined: "a fiberoptic switch system for monitoring an external condition or stimuli, such as the position of a switch or moving part or some other physical condition which is desired to be monitored." There is no discussion in Anderson, et al. of an electro-surgical instrumentation or suggestion that the limit switch might work with such instrumentation. Anderson, et al. is silent as to key features claimed by applicant.

Claim Rejections under 35 USC § 103 – Legal Summary for Handy Reference

It is a long-standing rule that, when determining the patentable nature of a claimed invention which has two or more elements "the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination." *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 221 USPQ 481, 488 (Fed. Cir. 1984). Teachings of the prior art simply cannot be combined when the prior art contains no suggestion or motivation to combine them. See *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 221 USPQ 929, 933 (Fed. Cir. 1984). There can be no suggestion to combine where a reference teaches away from its combination with another source. A reference may be said to 'teach away' when a person of ordinary skill, upon reading the reference, would be discouraged from following a particular path or would be led in a direction divergent from the path that was taken by the applicant (for example, if the reference is combined as has been done, it would produce a seemingly inoperative device). As the Federal Circuit reiterated, see *In re Fritch*, (Fed. Cir. 1992):

It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. . . . This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

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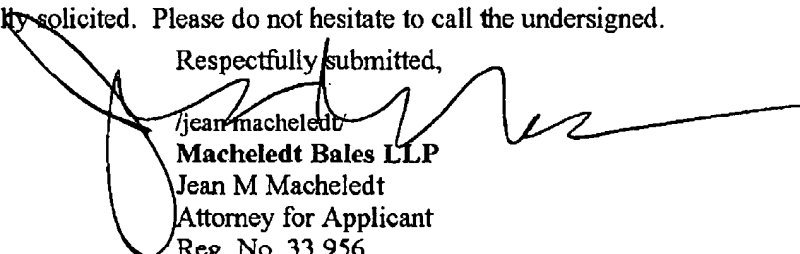
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One must look to see whether an artisan, with the references before him/her, could have made the claimed combination *without the exercise of invention*. Even if a primary reference *might be modified* by one skilled in the art to form the claimed structure, this does not make the modification obvious unless the prior art specifically suggests the desirability and details of the modification, see for reference *In re Laskowski* (Fed. Cir. 1989). It is known that a combination made up of elements taken piecemeal from separate references, where there is no teaching or suggestion to so combine, cannot properly be applied against a claimed invention to render it obvious within the meaning of 35 U.S.C. § 103.

Summary/Conclusion and Request for Reconsideration

In sum, after careful consideration of the references, one can see that each fails to disclose, teach or suggest the instant unique claimed invention. A closer look reveals that each reference identified stops short of appreciating or providing any motivation to arrive at the structures claimed in applicant's independent claims. And, although each dependent claim depending from an independent claim containing patentable subject matter is also considered patentably distinct, applicant's dependent claims include further limitations not taught or suggested in any combination of the references cited. Nothing can be found in the references to lead an artisan to try to combine them as has been done by the examiner, and nothing indicates any need to do so. The claims have been amended. Each of claims 1 – 20 overcome the examiner's objections and the §103 rejections, and as such, are patentably distinct from the art. Once again, it is submitted that applicant's claims contain allowable subject matter; therefore, favorable reconsideration is respectfully solicited. Please do not hesitate to call the undersigned.

Respectfully submitted,


/jean macheledt
Macheledt Bales LLP
Jean M Macheledt
Attorney for Applicant
Reg. No. 33,956
Phone: (970) 218-6798

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Fort Collins, Colorado

enclosure(s) ► Declaration under Rule 131 by inventor Michael D. Spears, with 7 pages of attachment → transmitted hereafter